

## REMARKS

The Applicant has received and reviewed the Office Action dated October 27, 2006 wherein the Office maintained the Office's rejection of claims 1-5 and 9 under 35 U.S.C. §102(b) as being anticipated by the reference of Takahashi (U.S. Patent No. 5,136,681); rejected claims 1-5 and 9 under 35 U.S.C. §102(e) as being anticipated by the reference of Jones et al. (U.S. Patent Publication No. 2004/0096178); rejected claims 8, 10-13, 16, and 18-20 under 35 U.S.C. §103(a) as being unpatentable over the reference of Takahashi; rejected claims 2, 14, and 17 under 35 U.S.C. §103(a) as being unpatentable over the reference of Takahashi in view of the reference of Snow et al. (U.S. Patent 5,039,193); and rejected claim 15 under 35 U.S.C. §103(a) as being unpatentable over the reference of Takahashi in view of the reference of Snow et al.

### Rejection under 35 U.S.C §102(b) to Takahashi

Applicant's claims 1, 3, 5-7 and 9 stand rejected under 35 U.S.C. §102(b) as being anticipated by the reference of Takahashi (U.S. Patent No. 5,136,681).

Although the Applicant respectfully disagrees with the Office's above rejection, the Applicant has canceled dependent claims 3 and 4 and amended claims 1, 5-7, and 9 to more clearly bring out the subject matter being claimed. Applicant's amended independent claim 1 now calls for in combination:

“an alignment mounting sleeve;

a first optical coupler mounted to the alignment sleeve, the first optical coupler having a first optical fiber and a second optical fiber, the second optical fiber rotatably mounted with respect to the first optical fiber with an end of the first optical fiber positionable proximate an end of the second optical fiber to

permit transfer of an optical signal between the first optical fiber and the second optical fiber while permitting rotation thereof; and

a second optical coupler mounted in the alignment sleeve, the second optical coupler having a third optical fiber and a fourth optical fiber, the fourth optical fiber rotatably mounted with respect to the third optical fiber with an end of the third optical fiber positionable proximate an end of the fourth optical fiber to permit transfer of an optical signal between the third optical fiber and the fourth optical fiber while permitting rotation thereof.” (Emphasis added.)

Support for the Applicant’s amendment to independent claim 1 can be found for example in canceled claims 3 and 4 and in Figures 3 and 4 of the Applicant’s drawings. (See for example optical coupler 10 and optical coupler 30 in Figures 3 and 4.)

On page 5, lines 23-26 of the Office Action, in support of the Office’s rejection, the

Office stated:

“Regarding independent claim 1, Takahashi teaches an optical coupler shown best in figure 3. The coupler comprises a first optical fiber (33) in a ferrule (41). A second optical fiber (34) is rotatably mounted with respect to the first optical fiber (33) with the end of the first optical fiber proximate an end of the second optical fiber (see column 5, lines 64-68) ...”

On page 2, lines 8-11 of the Office Action, the Office further stated that Takahashi’s device (shown in Figures 3 and 4) “... is an attenuator does not mean that it is not a coupler. Optical couplers come in many forms that all perform difference functions on the signal that they couple.”

Although the Applicant disagrees with the Office’s above statement, the Applicant respectfully submits that Applicant’s independent claim 1, as amended, is now allowable over the Office’s above interpretation of Takahashi’s attenuator as the reference of

Takahashi does not teach a first optical coupler having a first optical fiber and a second optical fiber and a second optical coupler having a third optical fiber and a fourth optical fiber.

Applicant's independent claim 1 also calls for an end of the first optical fiber positioned proximate an end of the second optical fiber to permit transfer of an optical signal between the two optical fibers while permitting rotation between the two optical fibers.

The Applicant respectfully submits that the reference of Takahashi '681 does not teach the above feature of Applicant's amended independent claim 1. It is noted that Takahashi '681 does not teach the rotation of Takahashi '681's optical fibers 33 and 34 but instead teaches the revolving of Takahashi '681's ferrule, and more specifically, the revolving of Takahashi '681's ferrule 42 caused by the operator's revolving of Takahashi '681's knob 42c in order to obtain a desired attenuation value. (See column 5, lines 64-67 and column 6, lines 1-4.) The Applicant submits that Takahashi '681's ferrule is different from Takahashi '681's optical fibers 33 and 34.

It is for the above reasons that the Applicant respectfully submits that Applicant's independent claim 1, as amended, is allowable over the reference of Takahashi '681.

In regards to Applicant's dependent claim 6, Applicant's dependent claim 6 has been amended to now call for the combination of claim 1 including:

“...a flanged member directly holding the first optical fiber and a rotatable member comprising a further flanged member directly holding the second optical fiber.” (Emphasis added)

The Applicant respectfully submits that the reference of Takahashi does not teach the above features of Applicant’s independent claim 6 as Takahashi ‘681’s holders 51 and 52 do not directly hold optical fibers 33 and 35. Instead Takahashi ‘681’s holders 51 and 52 directly hold’s Takahashi ‘681’s ferrules 41 and 42.

In regards to Applicant’s dependent claim 7, Applicant’s dependent claim 7 has been amended call for the combination of claim 6 wherein:

“...a U-shaped member holds the flanged member and the further flanged member in rotational engagement with each other.” (Emphasis added)

On page 3, lines 16-18 of the Office Action, in support of the Office’s rejection of dependent claim 7, the Office state:

“A U-shaped member (57 and 58) holds the first and second flanged members in rotational engagement with each other.”

The Applicant strenuously disagrees with the Office’s above statement as Takahashi ‘681’s coupling nuts 57 and 58 do not hold a first and second flanged members or even hold Takahashi ‘681’s holders 51 and 52 (which the Office previously stated were flanged members) in rotational engagement with each other. Note that Takahashi ‘681’s holders 51 and 52, which the Office again stated were flanged members, are not in rotational engagement with each other. (See Takahashi ‘681’s Figures 3 and 4).

On page 3, lines 10-12 of the Office Action, in support of the Office's rejection of Applicant's dependent claim 7, the Office stated:

"...The flanged members are engaged in a rotational position and are secured in a such a position by the U-shaped members." (Emphasis added.)

The Applicant respectfully submits that Takahashi '681's coupling nuts 57 and 58, which supports the "rotational positioning" of Takahashi '681's holders 51 and 52 is different from the U-shaped member of Applicant's dependent claim 7, which holds Applicant's flanged member and the further flanged member in rotational engagement with each other.

It is for the above reasons that the Applicant respectfully submits that Applicant's dependent claims 6 and 7, as amended, are allowable over the reference of Takahashi '681.

**Rejection under 35 U.S.C §102(e) to Jones et al.**

Applicant's claims 1-5 and 9 stand rejected under 35 U.S.C. §102(e) as being anticipated by the reference of Jones et al. (U.S. Patent Publication No. 2004/0096178). On page 6, lines 18-22 and page 7, lines 1-4 of the Office Action, in support of the Office's above rejection, the Office stated:

"Regarding independent claim 1, Jones et al teaches an optical coupler shown best in figure 6 comprising a first optical fiber within a ferrule (61) and a second optical fiber in a ferrule (62). Jones et al teach that the ferrule bores hold optical fibers (see second paragraph of the abstract). Hereinafter, the reference numbers of ferrules will be used to reference the ferrules and the optical fibers contained therein. The second optical fiber (62) is rotatably mounted with respect to the

first optical fiber (61) with an end of the first optical fiber positioned proximate an end of the second optical fiber as seen in figure 6 (see paragraph 37). An optical signal is transferred between the first and second fibers (see paragraphs 8 and 9) while permitting rotation of second optical fiber (see paragraphs 37-39)."

Although the Applicant respectfully disagrees with the Office's above rejection, the Applicant has amended claims 1, 5-7, and 9 to more clearly bring out the subject matter being claims. Applicant's amended independent 1 now calls for in combination:

"an alignment mounting sleeve;

a first optical coupler mounted to the alignment sleeve, the first optical coupler having a first optical fiber and a second optical fiber, the second optical fiber rotatably mounted with respect to the first optical fiber with an end of the first optical fiber positionable proximate an end of the second optical fiber to permit transfer of an optical signal between the first optical fiber and the second optical fiber while permitting rotation thereof; and

a second optical coupler mounted in the alignment sleeve, the second optical coupler having a third optical fiber and a fourth optical fiber, the fourth optical fiber rotatably mounted with respect to the third optical fiber with an end of the third optical fiber positionable proximate an end of the fourth optical fiber to permit transfer of an optical signal between the third optical fiber and the fourth optical fiber while permitting rotation thereof." (Emphasis added.)

Support for the Applicant's amendment to independent claim 1 can be found for example in canceled claims 3 and 4 and in Figures 3 and 4 of the Applicant's drawings. (See for example optical coupler 10 and optical coupler 30 in Figures 3 and 4.)

The Applicant respectfully submits that the reference of Jones et al.'s does not teach a first optical coupler containing two optical fibers that are rotatably mounted with respect to each other and a second optical coupler containing two optical fibers that are rotatably mounted with respect to each other. The reference of Jones et al. instead teaches an optical coupling assembly unit that includes a first stationary ferrule 19, a second

stationary ferrule 63 and a third ferrule 62 located between the first stationary ferrule 61 and second stationary ferrule 63 with the third ferrule 62 rotatably mounted with respect to the first and second stationary ferrules 61, 63.

On page 4, lines 2-3 of the Office Action, the Office state:

“... Jones et al teaches a first coupler (between 61 and 62) and a second coupler (between 62 and 63) within an alignment sleeve (105).”

The Applicant strenuously disagrees with the Office’s above statement as a review of Figure 6 of Jones et al.’s reveals that Jones et al. lacks a first optical coupler containing two optical fibers and a second optical coupler containing two optical fibers located between Jones et al.’s alignment sleeve 105. Instead, Jones et al.’s Figure 6 shows a portion of ferrules 61 and 62 along with index matching material 108 and a portion of ferrules 62 and 63 along with index matching material 108 located in Jones et al.’s alignment sleeve 105. (See Figure 6 of Jones et al.)

It is further submitted that the reference of Jones et al. also does not teach an alignment sleeve mounted on both a first optical coupler and a second optical coupler as called for in Applicant’s amended independent claim 1. Note that Jones et al. instead teaches the use of two separate sleeves 105, a first sleeve to attach Jones et al.’s first ferrule 61 to Jones et al.’s second ferrule and a second sleeve to attach Jones et al.’s second ferrule 62 to Jones et al.’s third ferrule 63. (See Figure 7 of Jones et al.)

It is for the above reasons that the Applicant respectfully submits that Applicant's amended independent claim 1 is allowable over the reference of Jones et al.'s.

**Rejection under 35 U.S.C §103(a) to Takahashi**

Applicant's claims 8, 10-13, 16, and 18-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the reference of Takahashi.

In regards to Applicant's independent claims 8, 10, 11, and 16, Applicant's claims 8, 10, 11 each calls optical fibers having an angle cut face or an angle cut terminus. Applicant's claim 16 calls for the step of "...forming a coupling angle cut face on the terminus of the optical lead..." The Applicant submits that the reference of Takahashi '681 does not teach Takahashi '681's optical fibers 33 and 34 as having an angle cut face or angle cut terminus as called for in Applicant's claims 8, 10, and 11, or the step of "...forming a coupling angle cut face on the terminus of the optical lead..." as called for in Applicant's claim 16. In regards to Takahashi '681's ferrules 41 and 42, although Takahashi '681 show ferrules 41 and 42 as each having an angled end, the Applicant submits that Takahashi '681's ferrules 41 and 42 are not optical fibers.

On page 4, lines 5-11 of the Office Action, the Office stated:

"The examiner agrees that an angle cut terminus is not explicitly stated. However, the examiner disagrees with applicant's assertion that this is not an obvious limitation. The examiner has explained this in the previous office action. Further support is Takahashi's teaching that the ferrule edge is finished by polishing the ferrule surface at seven to eight degrees. This results in a reduction of the optical at the interfaces of the device. See column 7, lines 16-34.)."

Although the Applicant agrees with the Office that Takahashi '681 does not show a fiber having an angle cut terminus, the Applicant respectfully disagrees with the Office's statement that it would have been obvious for Takahashi '681's optical fibers 33 and 34 to have angle cut terminus because Takahashi '681 teaches that the ferrule edge is finished by polishing the ferrule surface at seven to eight degrees. The Applicant respectfully submits that it would not have been obvious for the ends of Takahashi '681's optical fibers 33 and 34 to have angle cut terminus such as by polishing the optical fiber surfaces at seven to eight degrees because unlike Takahashi '681 ferrule, the circumference of Takahashi '681's optical fibers 33 and 34 are sufficiently smaller than the circumference of Takahashi '681 ferrule edges thereby preventing them from being polished or making them very difficult to be polished, especially at seven to eight degrees.

In further regards to the above, referring to Takahashi '681's Figure 4, the Applicant submit that the transfer of an optical power can occur with the presence of a gap/space located between the ferrule and in turn the optical fibers as evidence in Takahashi '681's Figure 4 and Takahashi '681's column 6, lines 29-43. Since the transfer of optical power can occur with the presence of a gap/space located between the ferrule and in turn the optical fibers, the Applicant respectfully submits that the aforementioned is evidence that the presence of the angle cut terminus on Takahashi '681's ferrules 41 and 42 does not translate into Takahashi '681's optical fibers 33 and 34 having angle cut terminus in order for Takahashi '681's to transfer of optical power.

In further regards to Applicant's independent claim 11, Applicant's independent claim 11 calls for an apparatus for optical coupling and optical decoupling that includes "... a rotational joint located on the first optical fiber..." The Applicant respectfully submits that a review of the reference of Takahashi '681 reveals that Takahashi '681 does not teach a rotational joint located on Takahashi '681's optical fiber 33 or optical fiber 34.

In regards to the Office's statement on page 4, lines 21-22 that Takahashi '681 teaches "... a rotational joint on the first fiber (34) (col. 5, lines 64-68) ...," the Applicant respectfully but strenuously disagrees with the aforementioned. It is submitted that Takahashi '681 does not teach a rotational joint located on Takahashi '681's optical fiber 34. Referring to column 5, lines 64-68, note that Takahashi '681 instead teaches "... ferrule 42 can be revolved around the optical axis thereof by a predetermined angle within 180 degrees." (Emphasis added.) It is submitted that rotating around an optical axis of the first ferrule 41 is different from actually rotating about an optical fiber.

Applicant's independent claim 11 also calls for an apparatus for optical coupling and optical decoupling that includes:

"...an alignment sleeve for holding the angle cut terminus of the first optical fiber and the angle cut terminus of the second optical fiber in rotational alignment with respect to each other."

The Applicant respectfully submits that the reference of Takahashi '681 does not teach an alignment sleeve for holding a first optical fiber and a second optical fiber each having an angle cut terminus. In regards to Takahashi '681's adapter 59, it is submitted that

although Takahashi '681's adapter 59 is shown in Figures 3 and 4 supporting Takahashi '681's ferrules 33 and 34 therein, Takahashi '681 however does not teach Takahashi '681's adapter 59 as supporting an optical fiber having an angle cut terminus therein.

In further regards to Applicant's independent method claim 16, Applicant's method claim 16 calls for a method of twist free optical coupling that includes the step of "...forming a rotational butt coupled joint in an optical lead having a terminus;..."

On page 5, lines 1-3 of the Office Action, in support of the Office's rejection of Applicant's dependent claim 16, the Office stated:

"..., applicant argues that Figure 3 does not show a cylinder having a rotational butt coupled joint in an optical lead. Figure 3 shows the two cylinders (41 and 42) being flushed against one another at the interface. By definition this is butt-coupling." (Emphasis added.)

The Applicant respectfully disagrees with the Office's above statement and submits that the reference of Takahashi '681 does not teach the step of forming a rotational butt coupled joint in an optical lead as called for in Applicant's claim 16. In regards to Takahashi '681's ferrules 41 and 42, which the Office refers to as cylinders, the Applicant respectfully submits that Takahashi '681's cylinders 41 and 42 are not optical leads. Further note that Takahashi '681's Figure 3 does not show Takahashi '681's optical fibers 33 and 34 as having a rotational butt coupled joint in an optical lead.

It is for the above reasons that the Applicant respectfully submits that Applicant's claims 8, 10, 11, and 16, as amended, are allowable over the reference of Takahashi '681.

**Rejection under 35 U.S.C §103(a) to the combination of Takahashi and Snow et al.**

Applicant's claims 2, 14, 15 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the reference of Takahashi '681's in view of the reference of Snow et al. (U.S. Patent 5,039,193). In regards to Applicant's independent claim 15, independent claim 15 calls for an apparatus for optical coupling and decoupling that includes "...a first optical lead having a butt connectable end ..." and "a second optical lead having a butt connectable end ..." (Emphasis added.)

The Applicant respectfully submits that the combination of the references of Takahashi '681 and Snow et al. does not teach the aforementioned. More specifically, Takahashi '681 does not teach Takahashi '681's optical fibers 33 and 34 having a butt connectable end and Snow et al. does not teach Snow et al.'s optical fibers 16 and 30 having a butt connectable end. In regards to the Office statement on page 5, lines 5-6 of the Office Action that Takahashi '681's "...Figure 3 shows the two cylinders (41 and 42) being flushed against one another at the interface," the Applicant submits that Takahashi '681's ferrules 41 and 42, which the Office refers to as cylinders, are not optical leads. Further note that Takahashi '681's Figure 3 does not show Takahashi '681's optical fibers 33 and 34 as having a rotational butt coupled joint in an optical lead.

Applicant's independent claim 15 also calls for:

"...the second optical lead having an angle cut end face to allow passage of an optical signal through the angle cut end face ..."

It is submitted that the combination of the references of Takahashi '681's and Snow et al. does not teach the above as the references of Takahashi '681 and Snow et al. each do not teach an optical lead having an angle cut end face as called for in Applicant's claim 15. In regards to Takahashi '681's ferrules 41 and 42, although Takahashi '681 shows ferrules 41 and 42 as each having an angled end, the Applicant submits that Takahashi '681's ferrules 41 and 42 are not optical fibers.

On page 12, lines 8-11 of the Office Action, the Office stated:

"While the reference does not explicitly show a fiber having an angle cut terminus, fibers (33 and 34) are understood to be in the ferrules (41 and 41) to permit light transmission discussed above and it would have been obvious to one of ordinary skill in the art that the fibers would have an end face similar to that of the ferrules."

Although the Applicant agrees with the Office that Takahashi '681 does not show a fiber having an angle cut terminus, the Applicant respectfully disagrees with the Office's statement that Takahashi '681's optical fibers 33 and 34 have angle cut terminus because Takahashi '681's ferrules 41 and 42 have angle cut terminus. Attention is respectfully directed to Takahashi '681's Figure 4 and Takahashi '681's column 6, lines 29-43 wherein Takahashi '681's teaches that the transfer of an optical power can occur with the presence of a gap/space located between the ferrule and in turn the optical fibers. Since the transfer of an optical power can occur with the presence of a gap/space located between the ferrule and in turn the optical fibers, the Applicant respectfully submits that the aforementioned is evidence that the presence of angle cut terminus on Takahashi

‘681’s ferrules 41 and 42 does not translate to Takahashi ‘681’s optical fibers 33 and 34 having angle cut terminus in order for Takahashi ‘681’s to transfer of optical power.

In further regards to Applicant’s dependent claims 2, 5-10, 12-14, and 17-20, Applicant’s dependent claims 2 and 5-10 each depend on Applicant’s independent claim 1 and Applicant’s dependent claims 12-15 each depend on Applicant’s independent claim 11. Since Applicant’s independent claim 1, as amended, and Applicant’s independent claim 11 are allowable for the reasons given above, Applicant’s dependent claims 2, 5-10 and 12-14 should also be allowable. Applicant’s dependent claims 17-20 each depend on Applicant’s independent claim 16. Since Applicant’s independent claim 16 is allowable for the reasons given above, Applicant’s dependent claims 17-20 should also be allowable.

In view of the above, it is submitted that the application is in condition for allowance. Allowance of claims 1-2, and 5-20, as amended, is respectfully requested. Applicant has enclosed a version of the amendment showing changes made with this response.

Please note that a response to an Office Action for the present case was due on January 27, 2007. The Applicant hereby encloses a petitions for a three-month time extension up to and including the date of April 27, 2007 to file the response. Applicant is a large entity. Please charge the amount of \$1,020.00 for payment of the three-month time extension to Deposit Account 122145. The Applicant has also enclosed an executed PTO/SB/30 transmittal form for the filing of a Request for Continued Examination of the above-

identified application under 37 C.F.R. 1.114. Please also charge the amount of \$790.00 in payment of the filing fee for the request for continued examination to Deposit Account 122145.

Respectfully submitted,

**JACOBSON AND JOHNSON**

By



Carl L. Johnson, Reg. No. 24,273

Attorneys for Applicant

Suite 285

One West Water Street

St. Paul, Minnesota 55107-2080

Telephone: (651) 222-3775

Fax: (651) 222-3776

CLJ/tp  
Enclosure